We Claim:

1. An ultrasound applicator for applying ultrasound energy to the thoracic cavity comprising

a housing sized for placement in acoustic contact with the thorax,

an ultrasound transducer carried by the housing to generate ultrasound energy at a prescribed fundamental therapeutic frequency laying within a range of fundamental therapeutic frequencies not exceeding about 500 kHz, and

an ultrasonic coupling region carried by the housing being adapted, in use, to contact skin and being sized to transcutaneously conduct ultrasound energy in a diverging beam that substantially covers an entire heart, and

an assembly worn on the thorax and adapted to be affixed to the housing, to stabilize placement of the housing on the thorax during transcutaneous conduction of ultrasound energy.

2. An ultrasound applicator for applying ultrasound energy to the thoracic cavity comprising

a housing sized for placement in acoustic contact with the thorax,

an ultrasound transducer carried by the housing to generate ultrasound energy at a prescribed fundamental therapeutic frequency laying within a range of fundamental therapeutic frequencies not exceeding about 500 kHz, and

an ultrasonic coupling region carried by the housing being adapted, in use, to contact skin and having an effective diameter (D) to transcutaneously conduct ultrasound energy at the prescribed fundamental therapeutic frequency by the transducer,

the transducer having an aperture size (AP) not greater than about 5 wavelengths, wherein AP is expressed as AP = D/WL, where WL is the wavelength of the fundamental frequency.

3. An ultrasound applicator according to claim 2

further including an assembly worn on the thorax and adapted to be affixed to the housing, to stabilize placement of the housing on the thorax during transcutaneous conduction of ultrasound energy.

4. An ultrasound applicator according to claim 1 or 2

wherein the range of fundamental therapeutic frequencies is between about 20 kHz and about 100kHz.

5. An ultrasound applicator according to claim 4

wherein the prescribed fundamental therapeutic frequency is about 27 kHz.

6. An ultrasound applicator according to claim 1 or 2

wherein the ultrasound transducer is sized to provide an intensity not exceeding 3 watts/cm^2 at a maximum total power output of no greater than 150 watts operating at the prescribed fundamental therapeutic frequency.

7. An ultrasound applicator according to claim 6

wherein the range of fundamental therapeutic frequencies is between about 20 kHz and about 100kHz.

8. An ultrasound applicator according to claim 7

wherein the prescribed fundamental therapeutic frequency is about 27 kHz.

9. An ultrasound applicator according to claim 1 or 2

wherein the housing is sized to allow another device to be placed on the thorax near the applicator.

10. An ultrasound applicator according to claim 9

wherein the device includes an ECG electrode

device.

11. An ultrasound applicator according to claim 1 or 2

wherein the housing includes at least one chamber to hold an acoustic coupling media about at least a portion of the ultrasound transducer.

12. An ultrasound applicator according to claim 1 or 2

wherein the housing accommodates circulation of media about the ultrasound transducer.

13. An ultrasound applicator according to claim 1 or 2

wherein the ultrasonic coupling region includes a flexible material that forms a contour-conforming interface with skin.

14. An ultrasound applicator according to claim 1 or 2

wherein the housing includes a skirt that enables spacing a radiating surface of the ultrasound transducer from contact with skin.

15. A method for applying ultrasound energy to the thoracic cavity comprising the steps of

providing an ultrasound applicator including a housing sized for placement on the thorax, an ultrasound transducer carried by the housing, and an ultrasonic coupling region carried by the housing,

placing the ultrasonic coupling region in acoustic contact with skin on the thorax,

stabilizing the placement of the housing on the thorax,

operating the ultrasound transducer to generate ultrasound energy at a prescribed fundamental therapeutic frequency laying within a range of fundamental therapeutic frequencies not exceeding about 500 kHz, and

transcutaneously conducting the ultrasound energy

through the ultrasonic coupling region in a diverging beam that substantially covers an entire heart.

16. A method for applying ultrasound energy to the thoracic cavity comprising the steps of

providing an ultrasound applicator including a housing sized for placement in acoustic contact with the thorax, an ultrasound transducer carried by the housing, and an ultrasonic coupling region carried by the housing having an effective diameter (D),

placing the ultrasonic coupling region in acoustic contact with skin on the thorax,

operating the ultrasound transducer to generate ultrasound energy at a prescribed fundamental therapeutic frequency laying within a range of fundamental therapeutic frequencies not exceeding about 500 kHz, and

transcutaneously conducting the ultrasound energy through the ultrasonic coupling region at the prescribed fundamental therapeutic frequency,

wherein the transducer has an aperture size (AP) not greater than about 5 wavelengths, wherein AP is expressed as AP = D/WL, where WL is the wavelength of the fundamental frequency.

17. A method according to claim 16

further including the step of stabilizing the placement of the housing on the thorax.

18. A method according to claim 15 or 16

wherein the housing is placed on the chest or near the sternum.

19. A method according to claim 15 or 16

wherein the range of fundamental therapeutic frequencies is between about 20 kHz and about 100kHz.

20. A method according to claim 19

wherein the prescribed fundamental therapeutic frequency is about 27 kHz.

21. A method according to claim 15 or 16

wherein the ultrasound transducer is operated to provide an intensity not exceeding 3 watts/cm^2 at a maximum total power output of no greater than 150 watts operating at the prescribed fundamental therapeutic frequency.

22. A method according to claim 21

wherein the range of fundamental therapeutic frequencies is between about 20 kHz and about 100kHz.

23. A method according to claim 22

wherein the prescribed fundamental therapeutic frequency is about 27 kHz.